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BEFORE THE ARIZONA CORPORATION COMMISSION

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IN THE MATTER OF THE INVESTIGATION
OF REGULATORY AND RATE INCENTIVES
FOR GAS AND ELECTRIC UTILITIES.

Docket Nos. E-00000J-08-0314
G-00000C-08-0314

Response of Western Resource Advocates

Western Resource Advocates (WRA) hereby submits its answers to questions on energy efficiency policy filed by Staff on January 30, 2009. In some cases, responses to several questions have been consolidated into a single response and in some cases we have provided a response to only a portion of a question.

Question 1. *Which energy efficiency programs and program strategies are most effective in assisting particular customer segments such as ... customers in existing homes...?*

Response: It is important to target residential retrofit program efforts on less energy efficient houses, as long as the houses are not utterly inefficient. This conclusion is based on a study that looked at hourly electricity consumption before and after energy efficiency measures were installed on 148 existing homes in the Phoenix area.¹ The study involved retrofits of high efficiency heat pumps and air conditioners, efficient evaporative cooler motors, pre-coolers for air conditioners, shade trees, increased attic insulation, double pane windows, flat roof reflective coating, and sunscreens. The study concluded that unless houses are carefully targeted, residential retrofit conservation measures may produce only modest savings. In the Phoenix area, indicators of good target houses are single pane windows, more south facing glass, more window area, and less west facing glass.

Question 2. *What studies have ... parties conducted over the past decade regarding the various energy efficiency options available in Arizona? ... (c) Please provide data for ... the following options: ... (v) Landscaping to provide shading and passive solar.*

Response: WRA prepared an analysis of the cost effectiveness of shade trees for TEP.² The analysis covered tree growth rates, canopy areas, water needs and costs, shade tree energy and demand savings, tree survival, maintenance costs, program costs, and TEP's avoided costs. The study found that TEP's shade tree program is cost effective under a range of assumptions.

¹ Kim Clark and David Berry, "House Characteristics and the Effectiveness of Energy Conservation Measures," *Journal of the American Planning Association* 61 (Summer 1995): 386-395. Kim Clark and David Berry, "Targeting Residential Conservation Measures," *Home Energy* 11 (September/October 1994): 14-15.

² Initial Comments of Western Resource Advocates, Docket No. E-01933A-07-0401, filed October 10, 2007.

Question 3. *How can the energy efficiency efforts and programs be increased to provide even more benefits to customers? Specifically, how can the energy efficiency programs reach more customers and provide greater energy savings for each customer?*

Question 4. *Are there additional cost-effective energy efficiency programs or enhancements of existing programs that should be implemented? What new energy efficiency programs or measures, such as direct install, could be implemented to enhance energy efficiency of utility customers?*

Combined Response to Questions 3 and 4. In addition to targeting programs as described in response to Question 1, Arizona can look to innovative programs in other jurisdictions. Examples of innovative programs include the following:

- In 2008, Delta Montrose Electric Association in Colorado conducted a program in which over 90,000 CFLs were distributed to customers. The cooperative mailed coupons redeemable for 6 free Energy Star-qualified CFLs at a major retailer and distributed CFLs at various events. Delta-Montrose pays about \$2 per CFL and receives a \$1 rebate per CFL from Tri-State G&T.
- Since 1990, SMUD, in collaboration with the Sacramento Tree Foundation, planted more than 400,000 shade trees in the Sacramento area. Details on the SMUD program can be found at <http://www.smud.org/en/residential/trees/Pages/index.aspx>.

Question 5. *Are there specific actions the Commission should take to support energy efficiency programs?*

Response. The Commission should pursue three parallel courses of action:

- a. Set efficiency standards or guidelines for each utility.
- b. Authorize utilities to adequately recover fixed costs that would otherwise not be recovered as the utilities reduce sales due to energy efficiency measures. This authorization should be contingent on meeting or exceeding the standard (with a reasonable margin of error or "dead-band" around the standard).³
- c. Provide incentives to utilities for exceeding the standard.

Additional detail is provided in responses to subsequent questions.

Question 6. *Are there procedural options available to the Commission to accelerate progress towards increased energy efficiency?*

Response. The Commission could set efficiency standards in rate cases, in the resource planning process, or as guidelines to be developed in the current docket. If efficiency standards are set in the current docket or as a result of resource planning, cost recovery and incentives could be addressed via tariffs for DSM surcharges submitted for Commission review and approval (similar to the mechanism

³ There is a potential for windfall profits in that MWh saved by energy efficiency might be resold in the wholesale market at a profit which benefits shareholders but which is not considered in the calculation of recovery of fixed costs. If utilities credit margins from wholesale sales to their fuel and purchased power adjustor, the windfall profit problem is solved.

used for the Renewable Energy Standard) until the next rate case, at which time the Commission could incorporate the standards, cost recovery, and performance incentives in its rate order. More detail is provided in response to Questions 12-14, below. To move forward quickly, WRA encourages the Commission to adopt efficiency guidelines or standards in the current docket, although APS' standard could be adopted in its on-going rate case. Waiting for other utility rate cases to be conducted or for resource planning reviews to be completed creates an unnecessary delay in pursuing energy efficiency.

Question 7. *Would an annual energy efficiency standard or goal heighten the utilities' incentive to manage energy efficiency program to maximize results?*

Response. Yes. However, efficiency standards should pertain to multi-year periods rather than annual goals. For example, a standard could be set to achieve savings levels of x by the end of 2012, and savings levels of y by 2015. See also our response to Question 5.

Question 8. *What energy savings goals or standards should be set to increase energy efficiency in Arizona? How should an energy efficiency standard or goal be based (for example, on load or total resources), and at what level?*

Response. Based on the experience in other states as described below, over a multi-year period Arizona utility efficiency programs could reduce the growth in electricity sales by about one third. Additional savings can be obtained from non-utility programs.

WRA analyzed the effect of the intensity of state portfolios of utility and non-utility efficiency programs on the growth of electricity sales from 2001 to 2006, holding constant the effects on sales growth of electricity prices, changes in weather, changes in state gross domestic product, and other factors.⁴ The intensity of efficiency programs was measured using ACEEE scorecard scores for each state.⁵

The study found that:

"... energy efficiency is an effective resource for meeting some of the growth in demand for electric energy services.... The higher the utility efficiency program expenditures per capita and the greater the range of other efficiency programs offered, the greater the reduction in the growth of power sales. If the leading states' energy efficiency programs are pursued, the growth in a state's electricity sales would be reduced by about 60% relative to implementing no efficiency programs. A portfolio of efficiency programs should include financial incentives such as rebates for installing efficiency measures as well as programs that establish energy efficiency targets, set up energy efficient building codes, establish appliance standards, promote CHP, offer tax incentives for installation of energy efficient devices, and lead by example. The efficiency programs now underway in leading states such as Vermont, Connecticut, California, Massachusetts, Oregon, Washington, and others can serve as examples of successful practices." (pp. 3624-3625).

⁴ David Berry, "The Impact of Energy Efficiency Programs on the Growth of Electricity Sales," *Energy Policy* 36 (September 2008): 3620-3625.

⁵ M. Eldridge, M., B. Prindle, B., D. York, and S. Nadel, *The State Energy Efficiency Scorecard for 2006*. Washington, DC: American Council for an Energy-Efficient Economy, Report E-075, 2007.

The figure shows the relationship between the ACEEE scorecard score and sales growth for the 5 year study period for the average state. The average state has the average values of the factors affecting electricity consumption, other than the ACEEE scorecard score, such as electricity prices and changes in state gross domestic product. Applying the leading states' energy efficiency programs, as represented by the highest ACEEE scores, cuts the growth of a state's electricity sales by about 60% as compared to the case with no efficiency programs. Note that the effects shown in the graph pertain to portfolios of utility efficiency programs and other efficiency programs, not just utility programs.

Question 9. *How should the results of energy efficiency programs be publicly reported so that Arizona consumers can easily assess the effectiveness of those programs?*

Response. Utility reports on program progress and on monitoring and evaluation should be posted on the Commission's website.

Question 10. *What are the likely impacts on utility companies of increasing energy efficiency?*

Response. There are several impacts on utilities:

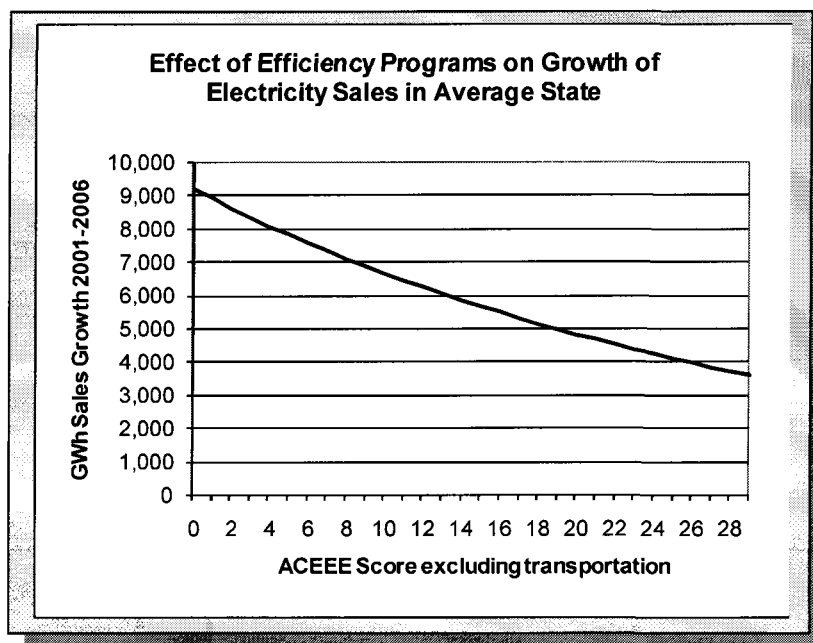
- Utilities will have to increase their expertise in designing and implementing efficiency programs. APS has already gained significant skill and knowledge on large scale efficiency programs.
- Utilities will be able to avoid fuel expenses and defer investments in generating capacity.
- Utilities will have less exposure to volatile fossil fuel costs and uncertain costs of complying with impending greenhouse gas emission regulations.
- Under traditional rate making and rate designs, utilities will not fully recover their fixed costs, between rate cases, as kWh sales diminish due to energy efficiency programs.

Question 11. *What role can or should decoupling play in efforts aimed at energy efficiency?*

Response. As explained below, the Commission should not pursue decoupling. Other approaches, described in response to subsequent questions, are preferable.

With "decoupling" of revenues from kWh sales, rates are adjusted between rate cases as follows:

$$\text{adjustment} = (\$/\text{kWh difference between the standard rate and variable cost}) \times \text{number of customers} \times (\text{baseline kWh use per customer} - \text{actual kWh use per customer}).$$
Thus, as usage per customer declines due to energy efficiency programs, the utility maintains a level of revenues sufficient to recover fixed costs.



This form of decoupling would result in an adjustment due to any factor that changes consumption per customer such as the effects of energy efficiency, and changes in weather, economic conditions, and prices. As a result, there could be large changes in rates between rate cases. Use per customer could be refined to account for deviations from normal weather, for the effects of price changes on consumption (price elasticity), and perhaps for other factors so as to focus the decoupling adjustment more on the effects of energy efficiency. But some of these refinements, like price elasticity modifications, require data that cannot be very accurately measured for a specific utility.

Experience with decoupling has revealed unanticipated problems. The Washington Utilities and Transportation Commission found that the Periodic Rate Adjustment Mechanism (PRAM) "had intended as well as unintended consequences. [Puget Sound Power and Light Company] acquired substantial conservation resources in 1991 through 1994, operating the most aggressive conservation program in the region, Whether this performance is attributable to the PRAM, or to the unique conditions faced by Puget during this period, has not, and perhaps cannot, be definitively established. At the same time the addition of new power resources, coupled with extended drought conditions, and warmer than average winters, [led] to large, upward annual rate adjustments and deferral balances. The annual proceedings, originally expected to be relatively straight-forward and simple, became complex and controversial."⁶ The Commission terminated the PRAM.⁷

Question 12. *In addition to decoupling, what other incentives, such as performance incentives, could be used to counter the disincentive of reduced sales that arise from energy efficiency programs?*

Question 13. *How should a performance incentive be structured?*

Question 14. *How can funding mechanisms be modified to increase utilities' incentive to more fully engage in energy efficiency programs?*

Combined Response to Questions 12-14. The parties to this docket should work collaboratively to develop specific policies to recommend to the Commission. The following discussion identifies innovative and tractable approaches in other states that we believe could provide a starting point for a collaborative effort. WRA is not proposing that Arizona adopt any of the specific approaches used in other states.

New Mexico. The New Mexico Public Regulation Commission is considering a rule to remove disincentives to energy efficiency and to reward good performance. See Box below. The draft rule was a consensus proposal developed in workshops. As part of the regulatory package concerning energy efficiency, the New Mexico Commission requires an independent evaluator to prepare measurement

⁶ Washington Utilities and Transportation Commission Docket No. UE-950618, Third Supplemental Order Approving Stipulation; Rejecting Tariff Filing; Authorizing Refiling, September 21, 1995, pp. 5-6.

⁷ WRA also recommends against recovery of lost net revenues as such recovery has a cumulative effect over time and can raise rates unexpectedly. This cumulative effect has proved problematic in other jurisdictions. The Minnesota Public Utilities Commission found that "much of the uncontrolled growth of incentive recovery under the previous plans was due to the fact that recovery of lost margins was cumulative. That is, under the previous incentive plan, once an amount of lost margins was determined to have occurred, it continued to be recovered in each subsequent year regardless of whether they were offset by sales growth in other areas. This feature (cumulative recovery of lost margins) has been eliminated from the proposed incentive, which is awarded based strictly on the amount of net ratepayer benefits (not lost margins) created in the instant year." Order approving demand side management financial incentive plans, Docket No. E,G-999/CI-98-1759, April 7, 2000, p. 5.

and verification studies (17.7.2.13 (E) NMAC). The Commission controls and directs the independent evaluator.

New Mexico PRC Proposed Rule

- 1) **Tariff rider or base rate adder.** An adder to the tariff rider or base rates will be determined each year based upon the energy and demand savings achieved by the utility. This adder shall commence with savings projected for programs in effect in the calendar year of the effective date of this rule.
- 2) **Calculation of the adder.** The adder will be calculated as follows:
 - a) lifetime energy savings will be the total lifetime KWh savings from additional participation in all programs in the utility's portfolio during a twelve month period, grossed up to account for system losses;
 - b) annual demand savings will be the reduction to annual peak KW the utility achieves each year through its energy efficiency and load management programs;
 - c) the adder each year will equal the lifetime KWh energy savings times \$0.01 per KWh plus the total annual kW demand savings times \$10 per KW.
- 3) **Adjustment to the adder calculation for low-income customer programs.** In determining the lifetime energy savings from a given utility portfolio, lifetime energy savings from programs targeted exclusively to low income customers will be valued at 1.25 times the actual KWh savings.
- 4) **Adjustment to the adder calculation for better performance.** If in any calendar year the additional annual energy savings from programs in that year are 1% or more of the total utility retail sales in that calendar year, the adder shall equal \$0.0125/KWh times the lifetime energy savings. If the excess is 1.5% or more, the adder shall equal \$0.015/KWh times the lifetime energy savings.
- 5) **True-up of the adder calculation for measurement and performance results.** After each comprehensive Independent Evaluator's measurement and verification report, the adder shall be adjusted to true-up the KW and KWh savings for which the adder was calculated and paid with the KW and KWh savings as determined in the report. The true-up process shall include adjustments to the adder level for performance at the levels specified in subparagraph (4) above and (6c) below.
- 6) **Rate design and ratemaking modifications.** The commission will develop rate design and ratemaking methods that address regulatory disincentives or barriers to public utilities to achieve energy efficiency savings.
 - a. Any party may, and each investor-owned electric utility shall, make a filing no later than December 31, 2009 that proposes rate design and ratemaking methods to remove regulatory disincentives or barriers for that utility to achieve energy efficiency savings. Such proposal may be included as part of that utility's general rate case or rate design proceeding. These methods shall include allowing the recovery of some or all fixed costs through fixed charges to customers, and may include decoupling or other ratemaking and rate design methodologies. In presenting its proposal, the utility shall provide, for informational or other purposes, a rate schedule for residential customers that adjusts fixed charges only for customers other than low-use residential customers.
 - b. The commission will issue a final order removing regulatory disincentives or barriers to utilities to achieve energy efficiency savings by adjusting the recovery of fixed costs through fixed charges, and adopting other appropriate rate design or ratemaking methods, within 12 months of the filing of such a proposal, but in no event later than December 31, 2010. To the extent the Commission has not removed all disincentives for a utility by December 31, 2010 the commission will remove remaining disincentives in an expedited manner.
 - c. The adder for new energy savings achieved from programs after December 31, 2010 shall be reduced to \$0.005 per KWh plus \$10 per KW for savings less than 1%, and \$0.00625 and \$0.0075 for savings of at least 1% and 1.5% respectively, plus \$10 per KW, as described in section 4 above. This reduced adder shall remain in effect unless and until the commission, upon the petition of any party, determines that another amount is appropriate to accomplish the removal of disincentives and provision of incentives.

Source: New Mexico Public Regulation Commission, Notice of Proposed Rulemaking, January 29, 2009, Case No. 08-00024-UT: In the Matter of a Rulemaking to Revise NMPRC Rule 17.7.2 NMAC to Implement the Efficient Use of Energy Act.

To illustrate the New Mexico proposal, assume it was applied to APS' DSM Program Portfolio Plan Update 2008-2010, filed December 28, 2007. APS estimated lifetime MWh savings for measures installed from 2008 to 2010 at 6,814,000 MWh and peak demand savings of 109.9 MW. If an adder of \$0.01 per kWh and \$10 per kW were applied to these savings, APS would receive, for the 3 year period, about \$70 million.

Colorado. The Colorado Public Utilities Commission adopted a "bonus" approach in a 2008 case involving Public Service Company of Colorado.⁸ The Commission concluded that "it is not appropriate, and likely not even feasible, to define in this docket the 'lost margins' resulting from DSM" (paragraph 105). Instead, the Commission authorized the utility to charge an amount equal to \$2 million in after-tax revenue annually (about \$3.2 million gross) for each year that it implements an approved DSM plan (paragraph 106). This authorization was characterized by the Commission as an annual bonus (paragraph 107).^{9, 10} An advantage of the bonus approach is that customers know what the cost of this component is and the utility knows how much revenue it will receive from this component.

Question 15. *Is additional funding needed for energy efficiency programs, and if so, what level of funding would produce the most benefits in relation to the cost?*

Response. Additional funding will be needed, but WRA does not have sufficient information to propose a funding level.

Question 16. *If the Federal Economic Recovery package is adopted and includes significant funding for energy efficiency programs, how best should these monies be spent to enhance energy efficiency in Arizona?*

Response. WRA does not have sufficient information to answer this question.

Question 17. *What specific energy efficiency programs, measures or delivery mechanisms would produce the most results from additional funding?*

Response. There are numerous possibilities for innovative and effective utility-sponsored efficiency programs and measures, including the following:¹¹

- Advanced lighting technologies
- Compressed air system management in the manufacturing sector
- Motor system optimization
- Pump efficiency improvements
- Combined heat and power (CHP)

⁸ Decision No. C08-0560, Docket No. 07A-420E, adopted May 23, 2008.

⁹ If the utility does not achieve at least 80% of that year's DSM energy goal, the \$2 million (after-tax) disincentive offset is subject to downward adjustment in subsequent years (paragraph 108).

¹⁰ The Commission also authorized a performance incentive.

¹¹ Sources: National Association of Manufacturers, *Efficiency and Innovation in US Manufacturing Energy Use*, no date. McKinsey Global Institute, *The Case for Investing in Energy Productivity*, 2008. McKinsey Global Institute, *Wasted Energy: How the US Can Reach Its Energy Productivity Potential*, 2007. James Simpson and E. Gregory McPherson, "Potential of Tree Shade for Reducing Residential Energy Use in California," *Journal of Arboriculture* 22 (January 1996): 10-18.

- Manufacturing system optimization
- High efficiency water heaters & solar water heaters
- Zero energy homes
- Shade trees

Respectfully submitted this 18th day of February, 2009.

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